## Agricultural Productivity and Efficiency in Russia and Ukraine

## **Building on a Decade of Reform**

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## Introduction

This report concentrates on the progress to date of agriculture-specific and economywide institutional reforms in Russia and Ukraine and explores the effect that reform would have on agricultural production and trade if these reforms were to be fully implemented. If the present pace of reforms and economic trends continues, Russia will remain a minor wheat exporter and a major meat importer, while Ukraine will remain a minor wheat exporter. However, if Ukraine and Russia are more aggressive in implementing reform, then they both have the potential to become significant grain exporters.

The analysis focuses on Russia and Ukraine. The Union of Soviet Socialist Republics (USSR) and, following the reforms of 1992, the Commonwealth of Independent States (CIS)<sup>1</sup> were important to international food markets in the past century. Russia and Ukraine, in particular, have been important as the dominant agricultural producers in the region. Both Russia and Ukraine were significant grain exporters in the early 20th century, and Ukraine is still remembered as the "breadbasket of Europe." More recently, Russia and Ukraine jointly accounted for more than 70 percent of total USSR production of several commodities

from 1988 to 1990, including meats and grains, a pattern that still holds for the CIS today (fig.1). These countries have continued to be important to international markets, but they have shifted in the past decade from significant grain importers to major meat importers.

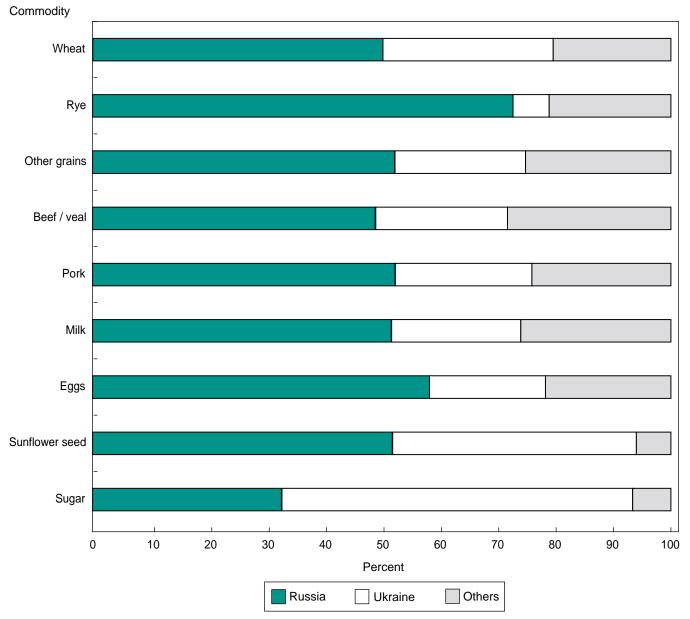
The study focuses mainly on state and collective ("corporate") farms in the crop sector in Russia and Ukraine and their potential to increase agricultural production in response to the completion of needed reforms. Corporate farms are the dominant type of farm, accounting for approximately 91 percent of arable cropland in Russia. They supply about 90 percent of grain and sugarbeet production and slightly less than half the livestock output. Private subsidiary garden plots, which are attached to corporate farms, account for 5 percent of arable land. These are distinct from private farms, which account for 4 percent of arable land. The private subsidiary plots account for more than 50 percent of gross agricultural output, but produce mostly vegetables and potatoes. Also, livestock production on the subsidiary plots is gradually overtaking that of corporate farms. (See box, "A Discussion of Farm Classifications.")

Changes in the agricultural sector in the CIS were to be brought about by reforms targeted at the agricultural sector and the overall economic reforms implemented at the beginning of 1992. Agriculture-specific reforms involved primarily the privatization of corporate farms and farmland. Economywide reforms include price and trade reform, and institutional reforms (e.g., privatization, reform of the court system, legislation supporting a market-oriented economy, etc.). Price and trade reforms were widely implemented, but institutional reforms (both agriculture-specific and economywide) were only partially implemented.

<sup>&</sup>lt;sup>1</sup>The CIS is all the countries of the former Soviet Union except for the Baltic countries of Estonia, Latvia, and Lithuania.

<sup>&</sup>lt;sup>2</sup>A significant amount of trade from Russia and Ukraine goes to Europe, which borders them to the west. Russia also trades significantly with countries on its long southern border, which extends from the Middle East to Asia. Both Russia and Ukraine are located at latitudes that are similar to Canada. Ukraine's agricultural sector is noted for the fact that one-third of the world's rich black soil is located there.

Figure 1
Russia and Ukraine production shares of agricultural commodities in USSR, 1988-1990



Source: USDA, 2002b.

At the beginning of the 1990s, analysts from ERS and elsewhere expected these reforms to have two offsetting effects on agricultural production. First, price and trade liberalization was expected to lead to the removal of price subsidies and should have exposed the agricultural sector to foreign competition. The initial result would be the contraction of agricultural production as prices received by farmers dropped. Offsetting that effect would be an increase in productivity as profitmaximizing farm managers learned to respond to the new, market-oriented price signals. In the long run, agriculture was expected to recover, leading to an increase in exports.

The actual result of reforms on the agricultural sector to date has been a large drop in production as subsidies were eliminated, but no corresponding rise in output or, as shown in this report, productivity. Several indicators of productivity and efficiency have declined since reform began. Productivity decline is evident from a casual glance at partial productivity measures, such as the total value of output per unit of land and labor (table 1).

Table 1—Russian crop output and input use of corporate farms, 1991-98\*

Year		Inputs				
	Output	Land	Labor	Fertilizer	Fuels	Machinery
	Billion	1,000	1,000	1,000	1,000	1,000
	1983 rubles	hectares	man-days	metric tons	metric tons	horsepower
Aggregate						
1991	70.7	250.8	2,379	60,518		
1993	52.5	233.3	2,401	16,658	34,280	248
1994	44.8	218.8	2,048	8,149	32,827	224
1995	36.8	211.2	1,902	7,154	28,518	205
1996	36.2	224.5	1,744	7,590	25,084	187
1997	38.8	214.9	1,593	8,235	22,704	175
1998	29.6	202.7	1,599	9,335	21,608	163
Annual growth						
rate, 1993-1998 (percent)	-11.4	-2.8	-8.1	-11.6	-9.2	-8.4
	1,000 1983 rubles					
Output per unit of input						
1991	n.a.	281.90	29.72	1.17		
1993	n.a.	224.93	21.86	3.15	1.53	211.99
1994	n.a.	204.66	21.86	5.49	1.36	199.49
1995	n.a.	174.18	19.34	5.14	1.29	179.67
1996	n.a.	161.30	20.76	4.77	1.44	194.04
1997	n.a.	180.42	24.33	4.71	1.71	221.16
1998	n.a.	146.11	18.51	3.17	1.37	181.75

<sup>\*</sup>Data for 1992 are not available.

Source: Goskomstat (2001).

## **A Discussion of Farm Classifications**

"Corporate farm" originally referred to the state ("sovkhozi") and collective ("kolkhozi") farms from the Soviet era. After privatization efforts in the 1990s, these farms were legally reorganized and turned over in their entirety to the farmers and pensioners. These farms continue to operate largely as they did under the Soviet system. Today, the term "corporate farm" is an all-inclusive phrase describing the various forms of privatization that did not involve breaking parcels of land off from the original farm.

A "subsidiary plot" is the name for the small plots of land (on average about 0.4 hectare) owned by the corporate or "mother" farm that workers were allowed to cultivate in their spare time. After privatization, the workers were granted limited ownership of these plots as part of the privatization process.

**"Private farms"** in Russia and Ukraine are the equivalent to family farms in the United States, where one farmer is the sole owner of land parceled off from the previously state-owned farm.

Since the funding and the political will to return to large-scale subsidization of the agricultural sector are lacking in the CIS countries, it would be difficult to reverse the price and trade liberalization reforms. While it is technically possible to reinstate state control of prices and trade, in a practical sense it is not likely. Consequently, the output fall resulting from

these reforms can be thought of as "irreversible." However, if agriculture-specific and economywide institutional reforms are completed, then some of the fall in agricultural output can be recovered through gains in productivity. Thus, some of the fall in output can be considered "reversible," once the requisite reforms are implemented.

n.a. = not applicable, --- = not available.

To illustrate the impact of hypothetical productivity increases on agricultural trade if reforms were to be completed, some modeling projections are made for wheat and barley for the next decade using data from the USDA Agricultural Baseline Projections to 2011 (USDA, 2002c). The present USDA predictions for the CIS region incorporate optimistic projections of gross domestic product (GDP) growth, but are less optimistic about productivity growth. The hypothetical cases incorporate more optimistic productivity assumptions. The projections show that Russia and Ukraine could become significant grain exporters, putting downward pressure on world grain prices.

The first section of the study describes the agricultural sector in Russia and Ukraine before and after the breakup of the Soviet Union, including details on the "irreversible" changes in output and trade, as well as potentially "reversible" changes. The next section examines various empirical measures of productivity for large-scale, corporate farms. That is followed by an examination of the future of agriculture-specific and economywide institutional reform. Next, the study analyzes potential agricultural output and trade in Russia and Ukraine, which includes a modeling exercise with different productivity scenarios. The final section summarizes the findings of the report.



Photo courtesy Belarus Tractor International.